

Appl. No. 09/910,968
Amdt. dated May 21, 2004
Reply to Office Action of February 25, 2004

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

Claims 1, 2, 8, 9, and 17 through 19 are pending in the application with claims 3-7 and 10-16 having been canceled and claim having been amended.

Claims 1, 2, 8, 9, and 17-19 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Winter et al. (U.S. Patent No. 5,545,786) in view of Higgins et al. (U.S. Patent No. 4,033,829).

Winter et al. disclose that nitroxyl inhibitors in combination with some oxygen reduce the premature polymerization of vinyl aromatic monomers during the manufacturing processes for such monomers. It is said that even small quantities of air used in combination with the nitroxyl inhibitors result in vastly prolonged inhibition times for said monomers.

The Examiner has stated:

"Winter discloses a method for inhibiting premature polymerization of vinyl aromatic monomers. The monomers are distilled in the presence of nitroxyl inhibitors (e.g., bis(l-oxyl-2,2,6,6-tetramethylpiperidin-4-yl)adipate) at a temperature of from 50 to 150° C and under reduced pressure. (See col. 2, lines 7-10, 66-67; col. 3, lines 1-63; col. 4, lines 5-7, 36-37)"

This is incorrect. It is true that Winter et al. disclose the distillation of vinyl aromatic monomers in the presence of nitroxyl inhibitors, and it is also true that it is taught at the bottom of column 2 that the vinyl aromatic compound can be distilled at a temperature from

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50° C to 150° C (although the only temperature used in the examples is 120° C, which is above the maximum of 110° C required by the present claims). However, there is no disclosure of carrying out such a distillation *under reduced pressure*. The only teaching relating to pressure in Winter et al. appears in column 4 at lines 5-7. However, this is a teaching of a procedure for removing butyl catechol from styrene and this purification step is *not done in the presence of any nitroxyl inhibitor*. Such an inhibitor is only added *after* the purification step and there is no teaching using reduced pressure in these subsequent steps.

All of the claims of the present application have now been amended to include the feature of former claim 8, distillation under pressure below 760 mm Hg.

Higgins et al. disclose the inhibition of styrene polymerization during the distillation thereof by incorporating therein, in an amount sufficient to inhibit polymerization thereof, a *dinitrophenol* solution recovered from styrene still residues or tars resulting from the distillation of styrene in the presence of dinitrophenol. Higgins et al. fails to supplement the deficiencies of Winter et al. as a reference.

As pointed out in the response to a previous Office Action, dinitrophenol is *not* a *nitroxyl-containing* compound and thus this patent provides no teaching of the difficulties encountered in using nitroxyl-containing compounds as inhibitors, nor does it suggest that problems involved in using nitroxyl-containing compounds as inhibitors can be overcome by recycling a stream *containing such inhibitors* at temperatures less than 110° C *and* at pressures below 760 mm Hg, as required by the present claims.

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The Examiner previously acknowledged that Higgins et al. do not specifically disclose that the product stream is recycled at a temperature no higher than about 110° C, but argued that they disclose that the product stream is processed at a temperature between about 70° C and 95° C and do not disclose that the recycled product stream is heated up before the recycling step and therefore took the position that the recycled product stream would be at a temperature no higher than about 110° C as claimed. The Examiner specifically relied on the disclosure at column 5 of the patent, at lines 36-44.

The cited disclosure, however, is directed to a step in the process that *follows* the distillation operation and is concerned with the purification of the dinitrophenol, as the Examiner has apparently realized. There is no reason to believe that such a temperature would be carried through to the distillation step that employs the recycled dinitrophenol. On the contrary, the patent teaches in column 4, at lines 38-41 that the *distillation column* was operated at an overhead pressure of 414 mm Hg which *resulted in a bottoms temperature of approximately 131° C*. This is precisely the kind of distillation temperature the present Applicants have taught is to be avoided.

Claim 1 requires that the temperature *in the distillation means* is the temperature that be no higher than about 110° C *and* that the pressure be below 760 mm Hg, *and* that a nitroxide inhibitor be present. These features are nowhere disclosed or suggested by Higgins et al.

Accordingly, it is requested that the rejection of claims 1, 2, 8, 9, and 17-19 under 35 U.S.C. 103(a) as being unpatentable over Winter et al. in view of Higgins et al. be withdrawn.

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In view of the foregoing, it is submitted that this application is now in condition for allowance and an early Office Action to that end is earnestly solicited.

Respectfully submitted,

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